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METHOD AND APPARATUS FOR IMPLEMENTING IN VIDEO A SECONDARY GAME RESPONSIVE TO PLAYER INTERACTION WITH A PRIMARY GAME

ABSTRACT

5 A method for operating a group of gaming machines interconnected by a network to play both primary and secondary games from the machines. Each of the gaming machines has a primary game associated with it. Play is allowed to occur on the gaming machines while a triggering event is detected. In a preferred embodiment, the triggering event is detected by monitoring an operating parameter of the gaming machines over the network, such as total coins
10 played. A predetermined criterion or threshold is set for the operating parameter and, if the operating parameter meets the predetermined criterion, a triggering event signal is sent through the network. Upon the occurrence of the triggering event, a secondary game is initiated from a selected one of the gaming machines whereby the secondary game is common to the group of gaming machines. The secondary game is most preferably a wheel-of-fortune-type game and is
15 displayed in common to all of the machines and local spectators on a plasma-based display monitor of the type marketed by Fujitsu under their Plasmatron™ brand. Driving the plasma-based monitor is an animation computer that contains software coded animation programs for displaying the wheel-of-fortune and related audio/video events responsive to a stand-alone bonus server (SBS).

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Invention Title: Method and Apparatus for Implementing in Video a Secondary

The following statement is a full description of this invention, including the best method of performing it known to me:-

METHOD AND APPARATUS FOR IMPLEMENTING IN VIDEO A SECONDARY GAME RESPONSIVE TO PLAYER INTERACTION WITH A PRIMARY GAME

FIELD OF THE INVENTION

5 This invention relates generally to electronic gaming machines interconnected by a computer network and more particularly to a method and apparatus for integrating a primary and secondary game within a computer network.

BACKGROUND OF THE INVENTION

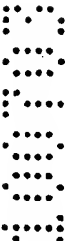
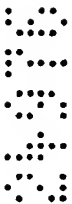
10 This specification refers to and describes content of US patents 5,655,961 and 6,319,125. However, neither the disclosure in those US patents nor the description contained herein of content of those US patents is to be taken as forming part of the common general knowledge solely by virtue of the inclusion herein of the reference to and description of content of those US patents. Furthermore, this specification describes aspects of prior art gaming devices and networked gaming device systems, e.g. bonusing. However, neither
15 such aspects of prior art gaming devices and networked gaming device systems nor the description contained herein of such aspects of prior art gaming devices and networked gaming device systems is to be taken as forming part of the common general knowledge solely by virtue of the inclusion herein of reference to and description of such aspects of prior art gaming devices and networked gaming device systems.

20 Casinos typically include electronic gaming machines (EGMs) such as slot machines and video poker machines. These games are referred to herein as the "primary game" associated with the particular gaming machine. Slot machines, for example, usually include three reels that each have a plurality of symbols printed thereon. After the player applies a wager to the machine, he or she starts play by triggering a switch that starts the reels spinning. Each reel stops at a random position and thereby presents three symbols -- one from each reel. Some combinations of symbols do not pay any jackpot. Others pay varying amounts according to predetermined combinations that appear in a pay table displayed on the machine and stored in the gaming machine's programmable read-on memory (PROM).

30 More recently, multiple gaming machines have been linked together into groups of machines that share the same bonus pool. A simple example of such a system is progressive video poker in which players play the primary poker game on one of a plurality of gaming machines grouped together on the casino floor. A coin-in counter, linked to all machines sharing the progressive pool, counts the total amount of money played in the group of machines and advances the progressive bonus pool accordingly. For instance, the casino can choose to set

aside 5% of all money played on the group of video poker machines to the bonus pool. The amount of the pool is displayed on a large LED display and is incremented as money is played. This amount is awarded automatically as a bonus should a player on one of the video poker machines receive a designated winning hand such as a royal flush. After the bonus is awarded,
5 the bonus pool is seeded with a nominal amount that is further incremented as described above.

The advantage of the progressive system is that the bonus pools from individual machines can be pooled to form larger awards, which in turn attracts more players. When taken to the extreme, progressive bonuses can be pooled together not only from machines in different areas of the casino, but also from different casinos in different states. More complex examples
10 for bonusing are implemented using bonus servers over a network, such as disclosed in US patent application no. 08/843,411, filed April 15, 1997, issued as US patent no. 6,319,125 and assigned to the Assignee of the present application, (the '411 application).



U.S. Patent No. 5,655,961, assigned to the Assignee of the present application (the '961 patent), also discloses bonuses that can be implemented by bonus servers over a network.

One drawback of the aforementioned progressive system is the preestablished nature of the bonus award whereby a triggering event (e.g. a royal flush) causes a set result (e.g. payment
5 of the progressive jackpot). There is no further element of chance once the triggering event occurs, e.g. no secondary game is initiated by the triggering event. Furthermore, there is very little incentive for the player to continue to play the gaming machine once the triggering event occurs since his or her bonus is assured.

Some EGMs include a secondary game to supplement the primary game. The assignee
10 of the present invention markets a gaming machine that integrates a mechanical wheel of fortune game with a single slot machine. A player of these machines would play the primary slot machine game until the symbols from the reel pull results in a particular combination that initiates the secondary game. Accordingly, the secondary game acts as a variable bonus on top of the jackpot resulting from the particular symbol combination obtained, wherein the jackpot is
15 fixed according to the payable stored in the gaming machine's PROM.

The coupling of mechanical elements has the disadvantage of being bulky and relatively unconfigurable. The type of secondary game and the payouts available cannot easily be changed. Additionally, such secondary games are not shared with adjoining machines so that the element of competition among players is removed and the enjoyment for spectators is
20 limited.

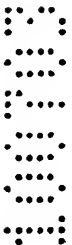


SUMMARY OF THE INVENTION

One aspect of the invention teaches a method for operating a group of gaming machines
25 interconnected by a network to play both primary and secondary games from the machines. Each of the gaming machines has a primary game associated with it, e.g. Double Double Diamond slots manufactured by IGT of Reno, Nevada. Play is allowed to occur on the gaming machines while a triggering event is detected. In a preferred embodiment, the triggering event is detected by monitoring an operating parameter of the gaming machines over the network, such
30 as total coins played. A predetermined criterion or threshold is set for the operating parameter and, if the operating parameter meets the predetermined criterion, a triggering event signal is sent through the network. Upon the occurrence of the triggering event, a secondary game is initiated from a selected one of the gaming machines whereby the secondary game is common to the group of gaming machines. The secondary game is most preferably a wheel-of-fortune-

type game and is displayed in common to all of the machines and local spectators on a plasma-based display monitor of the type marketed by Fujitsu under their Plasmatron™ brand. Such a monitor has a display size that measures 42" across a diagonal but is only 6" deep. Driving the plasma-based monitor is an animation computer that contains software coded animation programs for displaying the wheel-of-fortune and related audio/video events responsive to a stand-alone bonus server (SBS).

Use of the plasma-based display monitor confers several advantages over prior LED-based displays, Vacuum Fluorescent Displays (VFD), or even projection screen televisions. First, plasma-base displays take up a minimal amount of room on the casino floor where every square foot of space counts toward a casino's bottom line. Video monitors based on Liquid Crystal Display (LCD) technology also confer this advantage but are as yet not available in the desired size for casino play. Second, the number and vibrancy of colors available on plasma-based monitors, and the clarity of the picture, is unmatched in prior display technologies. Finally, the large size and uniqueness of the plasma-display, as well as the combination of a high-speed animation computer to drive the monitor, offer a great attraction to both players and spectators. It is possible, then, to visually see from each linked primary game machine the outcome of the secondary game.



An embodiment of this aspect of the invention consists of two or more slot machines (primary games), each having a CRT on which a Bonus Wheel (secondary game) is displayed. The Bonus wheel is spun upon the occurrence of a certain even such as a player obtaining a certain spin combination (triggering event) from one of the slot machines. In this embodiment
5 of the invention, the tertiary game is the one common to the group of games. The Bonus Wheel includes a space which, when obtained (second triggering event), allows that player to spin a "Big Wheel" (tertiary game) shown on a plasma display panel where the prize amounts are much larger. The game can also include a Celebration Wheel that contains prizes awarded to qualified persons on the gaming network when the Big Wheel is spun.

10 In another aspect of the invention, a secondary game controller is coupled via a network to the plurality of gaming computers and plasma-based display. The secondary game controller is adapted to monitor the activity of the gaming devices over the network and causes the secondary game to initiate when the monitored operating parameter meets a predetermined criterion. An animation computer, coupled to the plasma-based monitor, is driven in response to
15 control signals received from the secondary controller. Preferably included is an actuator on the gaming machines that can be configured by another control signal from the secondary game controller to alternately activate either the primary game on the gaming machine or the common secondary game. Also taught is a tertiary game that is initiated upon the second occurrence of the triggering event. Bonus amounts are awarded to selected machines depending upon the
20 outcome of the secondary and tertiary games.

In yet another aspect of the invention, a method for encouraging continued play on a gaming machine is taught whereby play is allowed to occur on the gaming machine. A triggering event based on a first criterion is detected. This triggering event can take the form of either a predetermined total number of coins played since the last triggering event, a certain reel
25 symbol or combination, or any other player-controlled or random occurrence. After the triggering event, the rate of play at the gaming machine is measured. If the rate of play meets a predetermined criterion (e.g. one coin played on average every 20 seconds), then a bonus is awarded depending upon the outcome of a tertiary game. Otherwise, if the rate of play drops below a certain threshold, then the player becomes ineligible to win the tertiary game award.

30 The advantage of this later aspect of the invention over the prior art is that the award of the second bonus is deferred depending upon the play speed of the player. It is in the casino's interest in the long term to get as many people to play such gaming machines as long as possible. A player who continues to play once he is guaranteed a deferred random bonus

payment stands a high probability of losing some of that award back to into the bonus pool as play continues on the primary game.

The foregoing features and advantages of the invention will become more readily apparent from the following detailed description of a preferred embodiment of the invention that proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram of an embodiment of a slot machine and associated hardware implemented in accordance with the present invention.

FIG. 2 is a schematic diagram of a plurality of the electronic gaming machines shown in FIG. 1 interconnected by a computer network to a secondary game in accordance with a preferred embodiment of the present invention.

FIG. 3 is a flow chart that depicts the operation of the FIG. 2 network in accordance with the present invention.

FIGS. 4A and 4B are flow diagrams depicting in more detail the implementation of the secondary game over the network of FIG. 2.

FIG. 5 is a schematic diagram of the spin button controller implemented according to a preferred embodiment of the slot machine of FIG. 1.

FIG. 6 illustrates a preferred embodiment of a secondary and tertiary game as displayed on a video monitor.

FIG. 7 is a schematic diagram showing the networked gaming system constructed according to an alternate embodiment of the invention incorporating the "Big Wheel" concept.

DETAILED DESCRIPTION

FIG. 1 is a highly schematic representation of an electronic slot machine 10, which is typical of each of the primary electronic game machines (EGM) linked to the gaming network of the present invention (see FIG. 2). Each of the EGMs incorporate network communications hardware as described hereinafter. This hardware is described in the '961 patent, and is referred to therein as a data communications node (DCN). Preferably the network communications hardware is like that disclosed in the '411 application, which is referred to therein as a machine communication interface.

The EGM as shown in FIG. 1 includes a primary slot game that is configured to operate as described below. Included in EGM 10 are three reels, indicated generally at 12. Each reel includes a plurality of different symbols thereon. The reels spin independently in response to

player input, such as by depressing button 14 after a wager is made, and stop spinning to present a randomly determined combination of symbols. Payouts are made automatically in accordance with a payable stored in memory in the slot machine 10.

The network communications hardware preferably comprises a machine communication interface or data communications node (DCN) 16 as set forth in the '411 application. DCN 16 facilitates communication between the network, via connection 18, and microprocessor 20, which controls the operation of EGM 10. This communication occurs via a serial port 22 on the microprocessor to which DCN 16 is connected. Microprocessor 20 is also connected to a memory, such as programmable read only memory (PROM) 24, which includes a preset payable for the primary game.

Each electronic gaming machine in the network preferably includes a player tracking module 26. The player tracker module can include a card reader (not shown) that reads a player-tracking card issued by the casino to individual players who choose to have such a card. The card reader and player-tracking card are known in the art, as are player-tracking systems, examples being disclosed in the '961 patent and '411 application. Briefly summarizing such a system, a player registers with the casino prior to commencing gaming. The casino issues a unique player-tracking card to the player and opens a corresponding player account that is stored on auditing database 48 (in FIG. 2) in an accounting system. The account includes the player's name and mailing address and perhaps other information of interest to the casino in connection with marketing efforts. Prior to playing one of the EGMs in FIG. 1, the player inserts his casino-issued card into the reader thus permitting the accounting system to track player activity, such as amounts wagered and won and rate of play. This information can then be used to offer complementary items or services to the player according to the total amount wagered in order to encourage the player to continue playing at the casino. Such a player tracker system is not required for the practice of the present invention since, as shown below, bonus amounts from the secondary and tertiary games are awarded to the machines themselves rather than the individuals playing the machines. However, it is understood that such player tracking can be included to award the bonus directly to the individual's account at the casino during cashless play.

Also included in the slot machine 10 are audio/visual outputs, such as a display 28, speaker 30 and flasher 32. The slot machine also includes an input device, such as player actuated button 14. Button 14 is configured to initiate the primary game, and can be configured (through spin control button 34) to initiate the secondary game as described in more detail below with reference to FIG. 5. In the alternative, a discrete second button (not shown) can be used to

initiate the secondary game. The DCN 16 facilitates communication between the network and these elements to provide an interactive experience for the player.

The player display 28 is preferably a vacuum fluorescent display (VFD) known in the art which operates to display to a player on a respective gaming machine a preestablished message responsive to the state of secondary and tertiary games controlled by a bonusing computer 38 (FIG. 2). Examples of the status messages displayed on the VFD are shown below in the following table:

TABLE I	
<u>VFD Display Messages</u>	
1.	"Get ready to WIN!" (default)
2.	"Get Ready to SPIN!!!"
3.	Hard Coded Error Message
4.	"Spin the Wheel!" (Reverse Flashing)
5.	Bonus Amount awarded from Secondary Game
6.	"More \$\$\$ coming soon!"
7.	Bonus Amount awarded from Tertiary Game

Each of these messages correspond to a "player state" communicated to the EGM by the bonusing computer. The messages are synchronized with signals sent to varying components of the EGM to enable the gaming machine to interact with the secondary and tertiary games according to the invention. The type of message displayed is dependent upon the state in which the gaming machine, the secondary game and the tertiary game is in as described below.

FIG. 2 shows one embodiment of the present invention implemented in a stand-alone network 36. Such a network is capable of existing by itself on a casino floor and need not be hardwired to other types of gaming machines throughout the casino. It is understood, however, that the system described below can implemented into a networked system as described in the '961 patent and the '411 application. The stand-alone system includes a plurality of gaming machines 10 coupled to a secondary game controller or stand-alone bonusing computer (SBS) 38 which controls the operation of the secondary and tertiary games. Included in the network 36 is a dedicated animation computer 40 which drives a large video display 42 according to animation states communicated to it via SBS 38, speakers 44 synchronized with the animation

state, and a wireless data port 46 for communicating accounting data to an auditing database 48 as described further below.

The animation computer 40 can be any medium-powered computer such as one having an Intel Pentium II 266 processor, 256MB SDRAM, a Matrox Millenium II 4MB graphics card, CD ROM drive, 4GB hard drive, and sound card. Gaming regulations typically require that modifiable media (e.g., hard-drive, flash BIOS, etc.) should have no impact on the outcome of the game. As the animation computer has these elements, the animation computer is configured to display a state as defined by the bonusing computer 38. It is understood, however, that as processing speed increases and computers become more powerful, it is foreseen that responsibilities for such animation can be accomplished by the processor in the bonusing computer or other devices on the network.

The video display device 42 can be any of the type of devices drivable by the animation computer to display the animation sequences described below. Examples include cathode ray tubes (CRTs), liquid crystal displays, plasma display panels (PDPs) or any other known or anticipated video monitor.

The preferred type of display 42 is the plasma-based display monitor such as the type marketed by Fujitsu under their Plasmatron™ brand. Such a monitor has a display size that measures 42" across a diagonal but is only 6" deep. Use of the plasma-based display monitor confers several advantages over prior LED-based displays, Vacuum Fluorescent Displays (VFD), or even projection screen televisions. First, plasma-base displays take up a minimal amount of room on the casino floor where every square foot of space counts toward a casino's bottom line. Video monitors based on Liquid Crystal Display (LCD) technology also confer this advantage but are as yet not available in the desired size for casino play. Second, the number and vibrancy of colors available on plasma-based monitors, and the clarity of the picture, is unmatched in prior display technologies. Finally, the large size and uniqueness of the plasma-display, as well as the combination of a high-speed animation computer to drive the monitor, offer a great attraction to both players and spectators. It is possible, then, to visually see from each linked primary game machine the outcome of the secondary game.

The bonusing computer 38 provides the central control mechanism for the stand-alone system. Communication with the various components of the stand-alone system 36 is described below.

Communication Between the SBS and the Gaming Machines

Play on each of the gaming machines determines the operating parameters of the machines. Exemplary parameters include: the rate of play on the machine, the total coins played, whether a maximum bet has been made, etc. These operating parameters are collected and sent through the network to the SBS 38 via each gaming machine's data control node 16. The SBS 38 collects this data and compares them to preestablished criteria to determine whether a triggering event occurs. Examples of preestablished criteria are the total number of coins played across all machines from the last triggering event and the minimum rate of play.

FIG. 3 broadly illustrates the preferred method in which the primary and secondary (and optionally the tertiary) games operate across the network. In step 50, triggering event criteria are programmed into a memory on the bonusing computer 38 and play is allowed to occur on the primary game of the gaming machines (step 52). During this normal state, message #1 (shown in Table 1 above) is displayed on the VFD 28 (FIG. 1) as the player plays the primary game.

During play, the operating parameters of the gaming machines are monitored over the network in step 54. One preferred example of this is the monitoring of the number of coins or credits played from the group of gaming machines as a whole. After each coin or credit is played at a particular gaming machine of the group, a signal is sent to the bonusing computer communicating the coin drop event and the gaming machine identification. Alternately, the coin or credit played signal can be sent to the bonusing computer after all coins have been played and the spin button 14 (FIG. 1) is depressed. Each coin drop or credit played and communicated to the bonusing computer advances a counter (not shown) common to the group of gaming machines. Whenever a monitored operating parameter of the gaming machines meets the predetermined criterion (step 56 inquiry), a "triggering event" occurs and a triggering event signal is sent through the network to the selected gaming machine which caused the triggering event (e.g., on which the 200th coin was played). The triggering event causes the secondary game to start (step 58) according to the methods outlined below.

In another aspect of the invention, the triggering event occurs when a player obtains a certain reel symbol or combination. In one example, the player obtains a combination that includes a special bonus initiator symbol linked to play on the secondary or tertiary game.

In the preferred embodiment, the apparatus for implementing the invention comprises five wide body, "chop top" IGT Double Double Diamond S+ slow machines, with the international bill acceptor. The top cabinet of the game will vary in size depending on the player tracking system of the installation site. In areas where the casino's player tracking system

requires a 2 inch mounting bracket, the top box will be 11 inches tall. In casinos where the player tracking bracket is 3 inches, the top box will be 12 inches tall. The pay table for the primary games will be contained in both the top glass and belly glass. Behind both sets of glass will be fluorescent flashers.

5 The Spin Reel button located on the control panel beneath the reel glass will be a larger version button and will flash notifying the player that it is time to spin the wheel. A logo for this button will be designed signifying that the button serves as both the reel spin and wheel spin button. The flashing of the spin wheel button will be configurable.

The DCN+ used in the preferred embodiment of the invention is based on the automatic
10 bonusing system (ABS) DCN+ manufactured by Acres Gaming or Corvallis, Oregon with the addition of the following specific items needed to support the game:

A new family of messages is introduced by the SBS: the "standalone bonus server to DCN passthrough". These messages provide a transport and container mechanism for messages to be sent from the Bonusing Computer 38 to the DCN 16 without any other piece of the system
15 (concentrator, bank controller, . . .) having any knowledge of their meaning. All GameX specific messages will belong to that family messages.

The DCN will support a "GameX session" mode, triggered by a message containing the following information:

Table II		
Data Sent		
1.	BonusId	identifies the bonus server to the DCN
2.	HitNumber	identifies the bonus instance to the DCN
3.	CSId	"Control String" ID to display (i.e. message to display)
4.	Timeout	timeout before sending "spin" event automatically
5.	FlashRate	Rate at which the spin button and fluorescent flasher flashes
6.	BeepRate	Rate of enunciator beep
7.	Lock Flag	indicates whether to lock the game or not for the bonus pay

20

This message can be sent several times with different parameters. For example when it is time for the player to press the SPIN button, the message is sent with flashrate on and a CSId requesting the "press SPIN now" string. Once the SBS has received the "button pressed" event

and the wheel is spinning, it then sends a message with flashrate sent to "don't flash" and a CSID requesting the "get ready to win" message.

In addition, when the system is not integrated within an ABS, all player tracking and carded bonuses will be removed from the DCN because they're not needed and the code space is needed to make room for the SAS 3.x port replicator.

Communication Between the SBS and Animation Computer

The communication protocol between the SBS 30 and animation computer 40 is comparative with the Local OL protocol, allowing overhead displays, card readers and animation computers to co-habitate on the same link. Animation computers use a protocol ID of 0x85. The protocol is polled, allowing the animation computer 40 to send a feedback message to the SBS 38, such as "animation sequence finished", rather than relying on timing to synchronize the SBS actions with the animation. The protocol is "state based", i.e. the SBS continuously informs the display of the state it should be in. This allows the system to occasionally miss a message without any impact on the animation. The animation computer can have an address that will be used when the system is integrated with any network-wide bonusing scheme. There can be several animation computers on one link, so the messages include an "animation computer ID" byte. The messages will carry a "pay table ID", to make sure that the animation computer's art and program match the information stored on the SBS. The SBS message can also carry a "volume control" byte allowing one to select overall playback volume. In case of code mismatch, the Animation Computer will go in an error mode.

When the counter reaches a predetermined criterion based on the inquiry of step 56 (e.g. the 200th coin played), a signal is sent from the SBS 38 to the animation computer 40 to begin the spin up animation sequence. Such an occurrence is called the "triggering event". The triggered animation sequence has the following features, each implemented in software-coded programs stored on the animation computer:

Table III	
<u>Animation Sequence</u>	
1.	Wheel at Rest
2.	Icon of Selected Game Drops into Queue
3.	Animated Gears Turning -- Wheel Ready to Spin
4.	Large Wheel Spinning

5.	Large Wheel Spun
6.	Coins Fall Indicating First Bonus Awarded
7.	Small Wheel Spun
8.	Coins Fall Indicating Second Bonus Awarded

A signal is sent to the gaming machine responsible for the triggering event (e.g. the machine at which the 200th coin is played) which changes the VFD 28 to display message #2 (shown in Table 1). Such a signal can be directed using methods known in the art such as by assigning an IP address to the gaming machine DCN 16.

A description of the animation sequences as described above will now be explained with reference to FIG. 6. FIG. 6 illustrates the secondary and tertiary game as displayed on the large video display monitor 42 coupled to the networked gaming machines 10. The secondary game includes a secondary game line-up area 60, a conveyer 62, a large multisegmented wheel 64, a tertiary game line-up area 66, and a second (smaller) multisegmented wheel 68. The preferred format of the secondary game is the "wheel-of-fortune" type of game as shown in FIG. 6 in which the secondary game wheel has a plurality of segments which each correspond to a bonus award. It is understood, however, that the secondary game can take a variety of configurable forms and should not be limited to the type of game shown in FIG. 6 and described below. For instance, the multisegmented wheel could be fixed and the pointed could travel around the periphery much like a ball travels around the periphery of a roulette wheel.

Prior to the triggering event, the SBS 38 communicates a "wheel at rest" state (#1 in Table 3) to the animation computer 40 which in turn runs the animation subprogram associated with that state until a state change. In such an animation, coins can be seen to fall from slots on the sides of the large wheel 64 while gears in the far background turn in slow, incremental steps. Low industrial sounds can be heard coming from speakers 44 (FIG. 2).

If a player at a particular gaming machine on the network causes a triggering event by, for instance, inserting the 200th coin, then a triggering signal is sent through the network to change the message shown on VFD 38 of the selected machine as well as instruct the animation computer to begin a new animation sequence. In one example of this animation sequence (#2 in Table 3), a player icon representative of the one gaming machine selected rolls onto the screen from the left of the display screen 42 and down a ramp into the secondary game line-up area 60. FIG. 6 illustrates this icon as circle 70 that could include within it the number of the selected machine. For instance, if the player at gaming machine #3 (out of the five total gaming

machines 10 on the stand-alone network 36) inserted the 200th coin, then the icon 70 would have displayed a '3' within it. Once the icon 70 is in the secondary game line-up area 60, the icon waits in a queue (shown by two adjacent icons lined up adjacent the ramp 62). The front icon in the queue (such as icon 72) moves up the conveyer 62 until it is positioned over the wheel 64 in a spin position.

Once the front icon 72 has moved to the spin position at the top of wheel 64, the "waiting to spin" animation sequence begins. In this sequence (#3 in Table 3), animated gears coupled to the wheel 64 begin to accelerate, a spin light on the selected gaming machine begins to flash red to indicate that the button should be pressed to initiate the secondary game. Accompanying sounds are played to build up the suspense of starting the secondary game.

When the button is pressed or after a predetermined amount of time, yet another animation sequence (#4 in Table 3) is started in which the secondary game wheel itself starts to spin. The secondary game wheel spins for different durations depending on the time period at which the button was activated and comes to rest with one of the bonus amount segments having been selected. The smaller wheel 68 also starts to spin during this time.

After the large wheel comes to rest, the bonus indicated by the outcome of the secondary game is paid out to the selected machine. The payoff animation sequence (#6 in Table 3) shows, for instance, many coins falling from a slot on the left side of the wheel accompanied by a variety of different sounds indicative of the size of the award. The volume level can be increased for larger awards. The amount of the award and the chance of receiving it can be configured by the casino operators using methods described in more detail below. Payoff is completed by sending a bonus signal to the selected gaming machine's DCN 16 (FIG. 1) which increases the credit account on that machine by the amount indicated by the award. Such signaling techniques are described in detail in the '961 patent and '411 application.

After the bonus for the secondary game is allocated, the player icon 72 of the selected machine is forcibly ejected from its position over the wheel 64 so that it rolls down a ramp into the tertiary game line-up area 66. The tertiary game occurs during the very next occurrence of the triggering event (e.g. the 400th coin-in). The SBS 38 monitors a second operating parameter (step 74 in FIG. 3) of the gaming machine 10 whose icon is located in the tertiary game line-up area and compares this second operating parameter to a second preestablished criterion (step 76 in FIG. 3). In a preferred embodiment of the invention, the rate of play of the selected machine is monitored by the SBS. If the rate of play falls below the preestablished criterion (e.g. greater than twenty second delay between coin-in events), then the player is deemed ineligible to win the bonus award from the outcome of the tertiary game. When the player becomes ineligible,

the player's icon is forcibly ejected from the tertiary game line-up area and appears to fall off of the video display monitor 42. If the player remains eligible until the second occurrence of the triggering event, then the player is allowed to play the tertiary game (step 78). The tertiary game operates much like the secondary game whereby the smaller wheel 68 spins up and down
5 similar to the larger wheel 64. A bonus is then awarded based on an outcome of the tertiary game.

FIGs. 4A and 4B show a flow chart illustrating this sequence in more detail. In step 80, criterion of play is determined such as the total number of coins played before a triggering event occurs. This can either be a fixed criterion (e.g. the 200th coin played) or a semi-random
10 criterion (the xth coin played where x is a randomly generated number between 200 and 800). A coin-in counter is zeroed in step 82 and play of the primary game on the plurality of gaming machines commences. The operating parameters of the gaming machines are monitored to detect a coin play (step 84). If a coin is played (step 86), then a counter at the SBS is incremented by the number of coins played (step 88). A comparison is made in step 90 between
15 the counter and the criterion established. If the criterion is satisfied, then the player responsible for the triggering event is sent into a queue for the secondary game (step 92).

Once in the secondary game queue, the player is put into a wait state (step 94) until the player's icon is moved to the front of the cue (step 96). While in this wait state, the player can still continue to play the primary game on the gaming machine. Once the secondary game is
20 ready to begin for the selected player, the secondary game is initiated (step 98) as by actuating button 14 and the animation sequence for the game is displayed on the video monitor (step 100). A bonus amount is determined from the outcome of the game (step 102) based on a semi-randomly determined amount stored in memory in a lookup table and the amount is paid to the selected machine (step 104). Eligibility for the tertiary game is determined by monitoring a rate
25 of play operating parameter of the selected machine (step 106). If the rate of play meets or exceeds the predetermined rate of play criterion, then the player is allowed to initiate the tertiary game (step 108) and gain the bonus award. Otherwise, the gaming sequence ends and the player keeps playing the primary game.

30 Gaming Machine Spin Button Configuration

Referring now to FIG. 5, the actuator used to initiate the primary slot machine game in the preferred embodiment is a "spin" button 14 located on the front console of the gaming machine. Spin button 14 is preferably the same button used to initiate the primary game (e.g. the slot machine). This arrangement is preferred because conventional gaming machines can be

used without changing the exterior buttons; only the DCN 16 and a spin button control 34 as described below need to be added. However, it is understood that a discrete second button on the gaming machine can be used to initiate the secondary game without departing from the spirit of the invention.

5 Under normal operation, pressing the button sends a signal to the primary game board microprocessor 20 to start the gaming sequence, e.g. start and then stop after a random time the spinning of the reels of the primary game. When the secondary game is called for by events described above, the DCN sends a deactivation signal such as a "pause" command to the primary game (shown by dashed line 110). The pause command causes the primary game
10 microprocessor 20 to turn the gaming machine's spin light 112 off, and to ignore the activation of its own spin button to initiate the primary game. When prompted by the Bonusing Computer 38, the DCN sends a signal along signal line OUT1 through an OR logic gate 114 to flash the machine's SPIN light, and sense the SPIN switch. When it senses the switch has been pressed, it sends an event to the Bonusing Computer 38 (FIG. 2) via connection 18 (FIG. 1) which
15 initiates the secondary game.

The debouncing of the switch 14 is preferably configured to ensure that the "button pressed" signal lasts several milliseconds so that the DCN 16 has time to detect it through the MACHINE_POWER input line. the signal is then routed to the Bonusing Computer 38 which then initiates the secondary game. Other control outputs from the DCN 16 are made along
20 signal lines OUT4 and OUT2 which control the flasher 116 and enunciator 118, respectively. The enunciator control is configured to make a sound in response to a signal from DCN 16 to grab the player's attention when it is time to initiate the secondary game by pressing the spin button 14.

25 Configuration Workstation

The configuration workstation allows the game operator to pick a pay table in a list of predefined pay tables. The predefined pay tables are stored in a file on the configuration workstation such as on a floppy disk or PC Card on a small portable computer such as the Libretto™ manufactured by Toshiba. Examples of parameters that can be adjusted are: the
30 number of segments of the big wheel, the bonus amount associated with each segment of the big wheel, the percentage chance of hitting each segment of the big wheel, the number of segments of the small wheel, the amount written on each segment, and the percentage chance of hitting

each of the segments. This list is not intended to be complete as it is understood that many other gaming parameters can be adjusted using the configuration workstation.

The configuration workstation can be connected over an Ethernet link to the bonusing computer. Preferably, however, the configuration computer and bonusing computer are
5 outfitted with complementary IrDA ports for transmitting and receiving wireless signals. Access to configuration parameters should be password protected for security reasons.

The bonusing computer is preferably configured to continuously broadcast the data needed for reports over its IrDA. These signals can include audit data (if the Bonusing computer is not hardwired to an accounting computer) detailing the pool name, meter readings
10 for each of the machines and the machines cumulatively, the number of hits on each segment of the wheel, etc.

The Big Wheel

In the "Big Wheel" game (hereinafter "BW game") according to the present
15 invention, two or more IGT vision games are linked together with the "Bonus Wheel" game developed by Acres Gaming, Inc. of Corvallis, Oregon, and adapt the existing bonus wheel by substituting (or adding) a symbol (a slice of pie in the wheel) to say "The Big Wheel." If the player qualifies for the regular bonus wheel, and the player's spin lands on this new symbol "The Big Wheel," the player will get to spin an additional wheel, located on a plasma
20 display, where the prize amounts are much larger.

The BW game will also have the capability of awarding celebration prizes to all players that are eligible at the time a player on the link qualifies for "The Big Wheel." The celebration prize will be located on a second, smaller wheel ("Celebration Wheel") that will spin after (or during) the "Big Wheel" spin. Eligible players will be awarded the amount the
25 Celebration Wheel lands on. There could be any number of criteria used to determine if a player is eligible for the bonus. Examples are listed below:

1. A player tracking card must be inserted in gaming machine 12.
2. Maximum coin bet must be played.
3. Specified play rate in coins/minute.
- 30 4. A particular reel sequence is obtained.
5. The "rating" of the player currently at the machine (e.g. whether he or she is a valued patron of the casino).

A schematic diagram of the BW game is shown in FIG. 7. The BW game includes two or more slot machines (primary games), each having a CRT on which a Bonus Wheel

(secondary game) is displayed. The Bonus Wheel is spun upon the occurrence of a certain event such as a player obtaining a certain spin combination (triggering event) from one of the slot machines. The Bonus Wheel includes a space which, when obtained (second triggering event), allows that player to spin a Big Wheel (tertiary game) shown on a plasma display panel where the prize amounts are much larger. The game can also include a group game (Celebration Wheel) that contains prizes awarded to qualified persons on the gaming network when the Big Wheel is spun.

In the alternative, the IGT vision game with the Bonus Wheel can be interpreted as being equivalent to a combined primary game. A player obtaining the special symbol on the Bonus Wheel would be a triggering event sufficient to initiate the "secondary" game, e.g. the Big Wheel. Under this interpretation, the Celebration Wheel could be considered a "tertiary" game that awards a second bonus to all qualified players responsive to its outcome.

In summary, it appears that the basic elements of The Big Wheel comprises the following elements: multiple primary games, a common secondary game playable upon a triggering event (which could include obtaining a certain combination), and a tertiary game playable upon a second triggering event.

Having described and illustrated the principles of the invention in a preferred embodiment thereof, it should be apparent that the invention can be modified in arrangement and detail without departing from such principles. I claim all modifications and variation coming within the spirit and scope of the following claims.



Modifications and variations such as would be apparent to a skilled addressee are deemed to be within the scope of the present invention.

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood
5 to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS

1. A method for operating a group of gaming machines interconnected by a network comprising the steps of:
5 allowing play to occur on the gaming machines, each of said gaming machines having a primary game associated therewith;
detecting a triggering event; and
initiating a single secondary game from one of the gaming machines upon the occurrence of the triggering event, said single secondary game being common to the group of
10 gaming machines.

2. The method of claim 1, wherein the step of detecting a triggering event comprises:
monitoring an operating parameter of the gaming machines over the network;
15 establishing a predetermined criterion for the operating parameter; and
sending a triggering event signal through the network when the operating parameter meets the predetermined criterion.

3. The method of claim 2 further including:
20 selecting one of the machines when the operating parameter meets the predetermined criterion; and
initiating the secondary game from the selected machine.

4. The method of claim 3 further including paying a first bonus to the selected
25 machine responsive to an outcome of the secondary game.

5. The method of claim 3 further including:
providing an actuator at each of the gaming machines for initiating the primary game;
sending a deactivation signal to the selected gaming machine;
30 disabling the actuator of the selected gaming machine, responsive to the deactivation signal, so that the actuator does not initiate the primary game; and
using the actuator to initiate the secondary game.

6. The method of claim 3 wherein the secondary game comprises a multisegmented wheel, each segment of the wheel having a predetermined bonus amount associated therewith, said method further including:

displaying a multisegmented wheel on a video display device;

5 initiating a control signal for the secondary game from the selected gaming machine, said control signal determining a bonus payment displayed on one of the segments of the wheel; and

paying out a bonus to the selected gaming machine responsive to said initiated control signal.

10

7. The method of claim 3 further including displaying a status message on the selected gaming machine responsive to the secondary game.

8. The method of claim 2 wherein the operating parameter is the total amount of
15 coins played on the group of gaming machines, and the criterion is a predetermined number of coins.

9. The method of claim 2 wherein the operating parameter is the total amount of money played on the gaming machines, and the criterion is a predetermined amount of money.

20

10. The method of claim 2 further including zeroing the monitored operating parameter after the operating parameter meets the predetermined criterion.

11. The method of claim 2, further including:

25 initiating a tertiary game responsive to a second triggering event; and paying out a second bonus responsive to an outcome of the tertiary game.

12. The method of claim 11 further including:

30 monitoring a second operating parameter of the selected gaming machine over the network;

establishing a second predetermined criterion; and

sending a second triggering event signal through the network when the second operating parameter meets the second predetermined criterion.

13. The method of claim 1 further including displaying the secondary game on a plasma-based flat panel video display device in common with the group of gaming machines.

14. An apparatus for selectively operating a plurality of machines over a network,
5 said apparatus comprising:
a plurality of gaming machines for playing a primary game thereon;
an actuator coupled to each of the gaming machines for selective activation of the primary game by a player at a respective gaming machine;
a secondary game controller;
10 a network coupled to the gaming devices and the controller for exchanging data between the secondary game controller and the gaming devices; and
a secondary game coupled to the secondary game controller for displaying the secondary game responsive to signals from the secondary game controller;
wherein the secondary game controller monitors the activity of the gaming devices over
15 the network and causes the secondary game to initiate when an operating parameter meets a predetermined criterion.

15. The apparatus according to claim 14 further including:
a plasma display monitor coupled to the secondary game controller for displaying the
20 secondary game responsive to signals from the secondary game controller.

16. The apparatus according to claim 15 further including an animation computer coupled to the plasma display monitor for driving the video display responsive to the secondary game controller.

17. The apparatus according to claim 14 further including:
means for selecting one of the plurality of game machines when the operating parameter meets the criterion; and
means on said selected machine for initiating said secondary game, wherein said
30 secondary game controller applies a first bonus to the selected machine responsive to an outcome of the secondary game.

18. The apparatus according to claim 14 further including a configuration workstation remotely coupled to the secondary game controller over the network for remotely changing the predetermined criterion.

5 19. The apparatus according to claim 14 further including a wireless data port coupled to the network for transmitting audit data to a remote wireless receiver.

20. The apparatus according to claim 14 further including:
a play counter for counting the total number of coins played across the plurality of
10 gaming machines, wherein the criterion is a predetermined number of coins.

21. The apparatus according to claim 14 further including:
a play counter for counting the total amount of money played across the plurality of
gaming machines, wherein the criterion is a predetermined amount of money.

15 22. A method for operating a gaming machine comprising the steps of:
allowing play to occur on the gaming machine;
detecting a triggering event based on a first criteria;
measuring a rate of play at the gaming machine; and
20 awarding a bonus after a second occurrence of the triggering event if the measured rate
of play at the gaming machine meets a predetermined criteria.

23. The method of claim 22 further comprising:
allowing play to occur at a plurality of other gaming machines; and
25 initiating a secondary game from a selected one of the gaming machines responsive to
the triggering event.

24. The method of claim 23 further comprising:
placing the selected gaming machine in a queue to play the secondary game responsive
30 to the triggering event, wherein the second game can be initiated from the selected gaming
machine only if the selected machine is at the front of the queue; and
awarding a secondary game bonus to the selected machine responsive to an outcome of
the secondary game.

25. The method of claim 23 further comprising:
initiating a tertiary game responsive to the secondary occurrence of the triggering event;
and
awarding the bonus to the selected gaming machine based on an outcome of the tertiary
5 game.

26. A method for operating a gaming device configured to play a primary game
comprising the steps of:
providing a plurality of gaming machines having a primary game associated therewith;
10 coupling the gaming machines to a common video display device;
displaying a bonus amount on the video display device;
permitting players to play the primary game at the gaming machines;
monitoring at least one variable related to user-controlled play on the gaming machines;
establishing a predetermined criterion for one of said variables;
15 selecting one of the machines when said one variable meets the criterion; and
awarding the bonus amount to said selected machine.

27. The method of claim 26, wherein the criterion includes the total coins played, the
method further including the steps of:
20 monitoring the number of coins played from each of the machines;
incrementing a common counter by the number of coins played from each of the
machines; and
selecting the machine at which the coins were played that caused the common counter to
match the criterion established.

28. The method of claim 26 wherein the common display device is a plasma-based
flat panel display.

29. The method of claim 26 further including the step of displaying a status message
30 on the selected gaming machine responsive to the bonus.

30. The apparatus according to claim 14 further including a video display device
coupled to the secondary game controller for displaying the secondary game responsive to
signals from the secondary game controller.

31. The apparatus according to claim 14 further including a liquid crystal display (LCD) device coupled to the secondary game controller for displaying the secondary game responsive to signals form the secondary game controller.

5 32. The method of claim 1 in which the triggering event is an occurrence of a predetermined reel combination on one of the group of gaming machines.

33. A method for operating a group of gaming machines interconnected by a network comprising the steps of:

10 allowing play to occur on the gaming machines, each of said gaming machines having a primary game and a secondary game associated therewith;

detecting a first triggering event responsive to play on the primary game of one of the gaming machines;

initiating the secondary game on the one gaming machine responsive to the detected first

15 triggering event;

detecting a second triggering event responsive to play on the secondary game;

said one gaming machine initiating a single tertiary game common to the group of gaming machines; and

awarding a bonus to the one gaming machine responsive to an outcome of the single

20 tertiary game.

34. The method of claim 33, further including the steps of:

determining eligible gaming machines different from the one gaming machine; and

awarding a bonus to the eligible gaming machines responsive to an outcome of the

25 single tertiary game.

35. A method for operating a group of gaming machines interconnected by a network substantially as hereinbefore described with reference to the accompanying drawings.
- 5 36. An apparatus for selectively operating a plurality of machines over a network substantially as hereinbefore described with reference to the accompanying drawings.
37. A method for operating a gaming machine substantially as hereinbefore described with reference to the accompanying drawings.
- 10 38. A method for operating a gaming device configured to play a primary game substantially as hereinbefore described with reference to the accompanying drawings.

Dated this Twenty Eighth day of April 1999.

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Applicant

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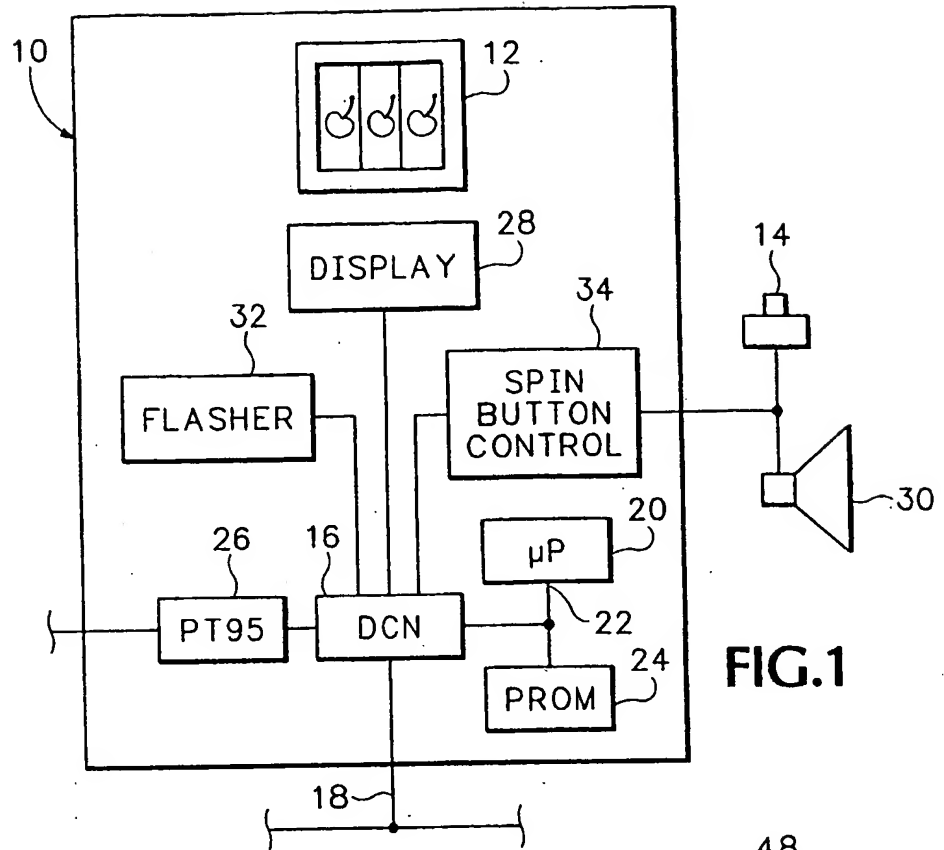


FIG. 1

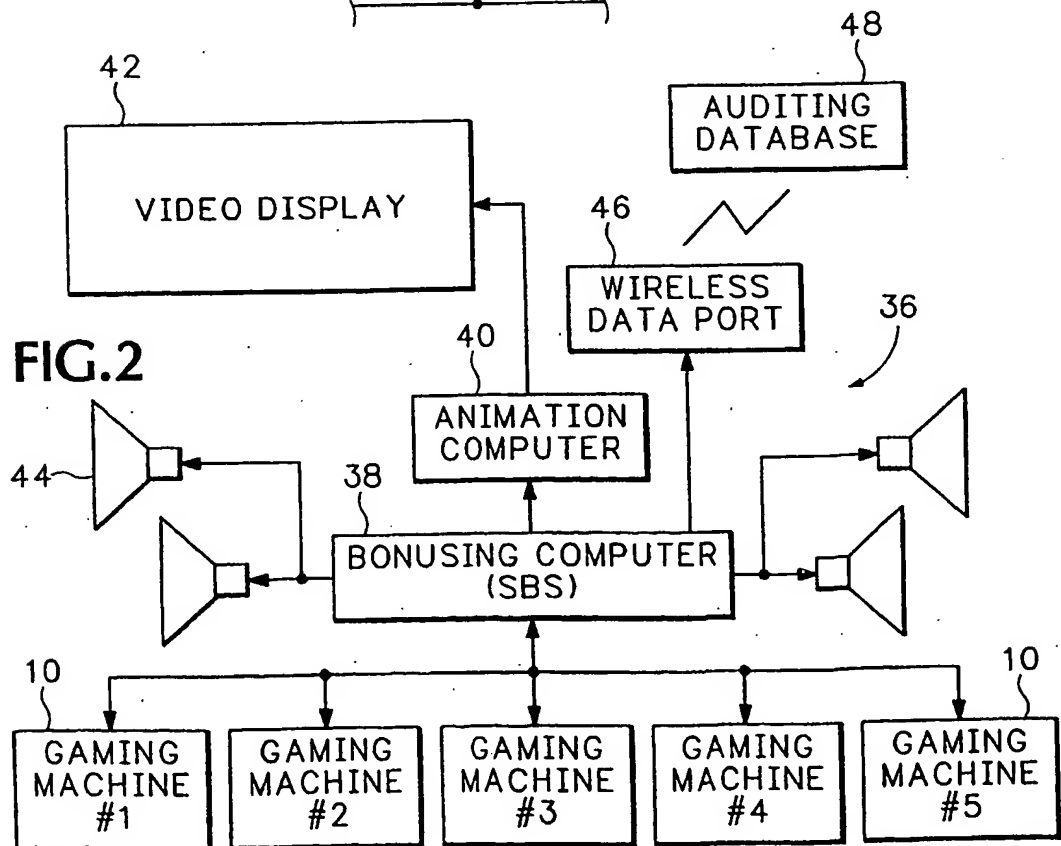


FIG. 2

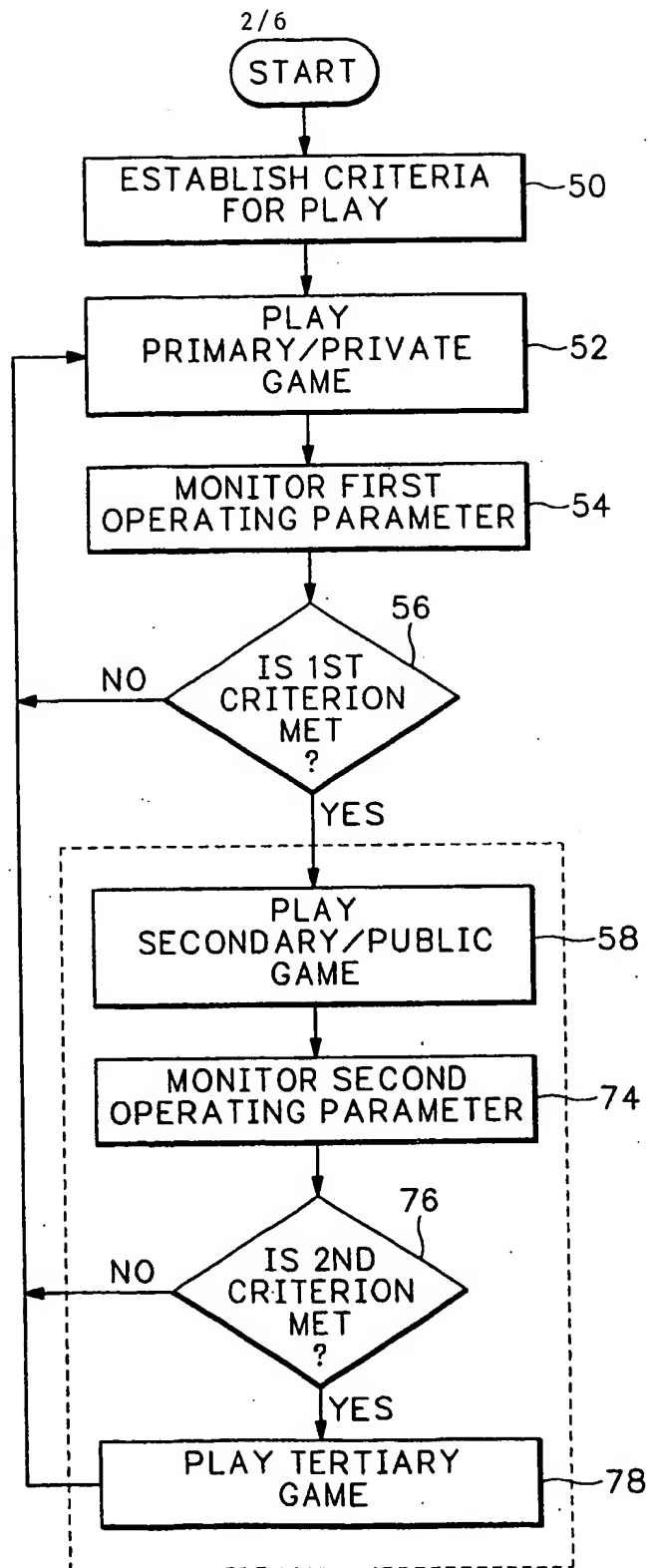


FIG.3

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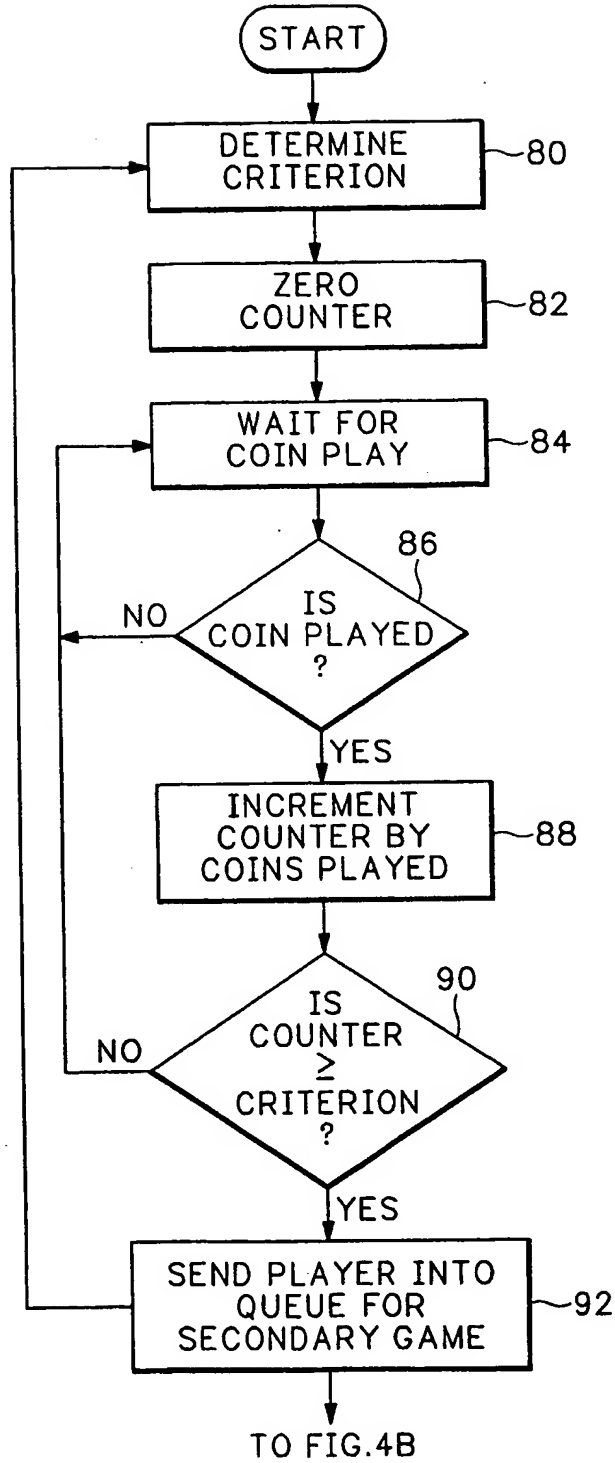


FIG. 4A

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FROM FIG.4A

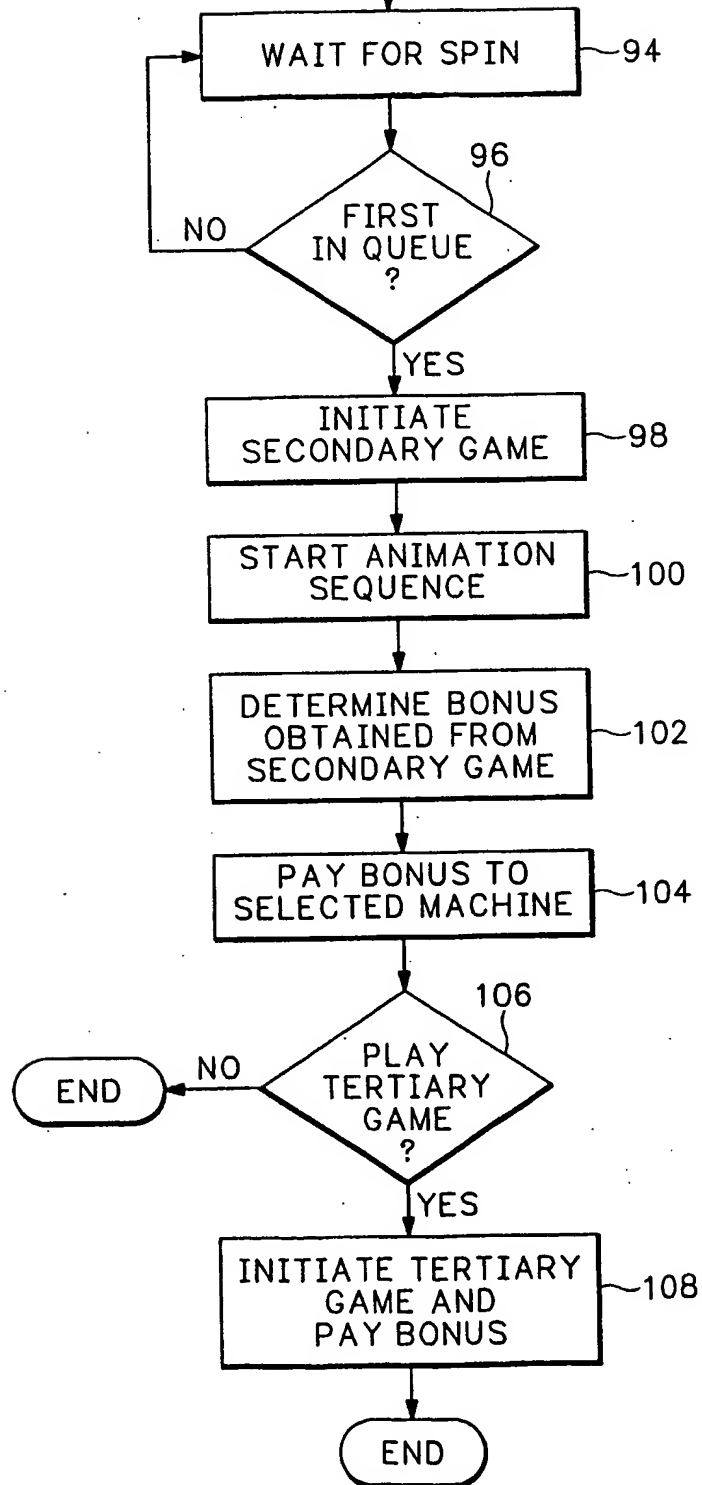


FIG.4B

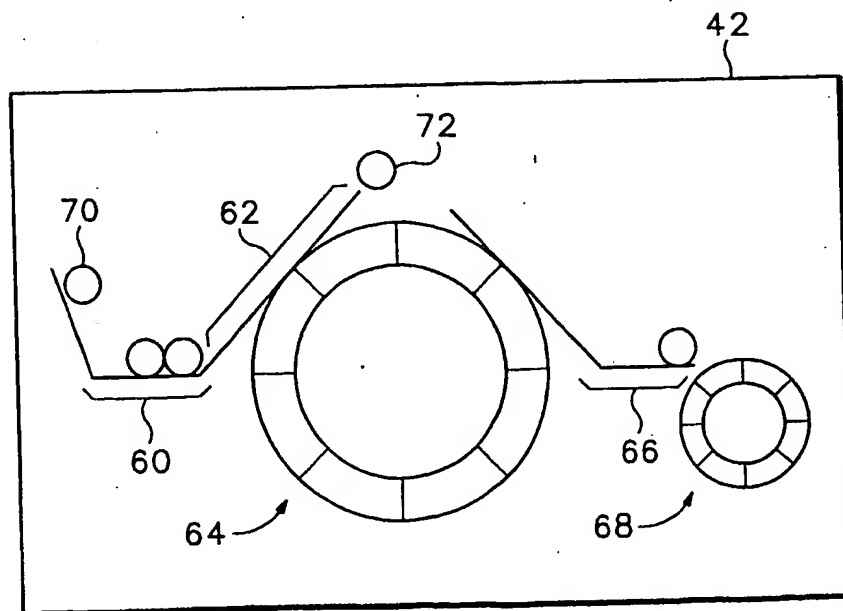
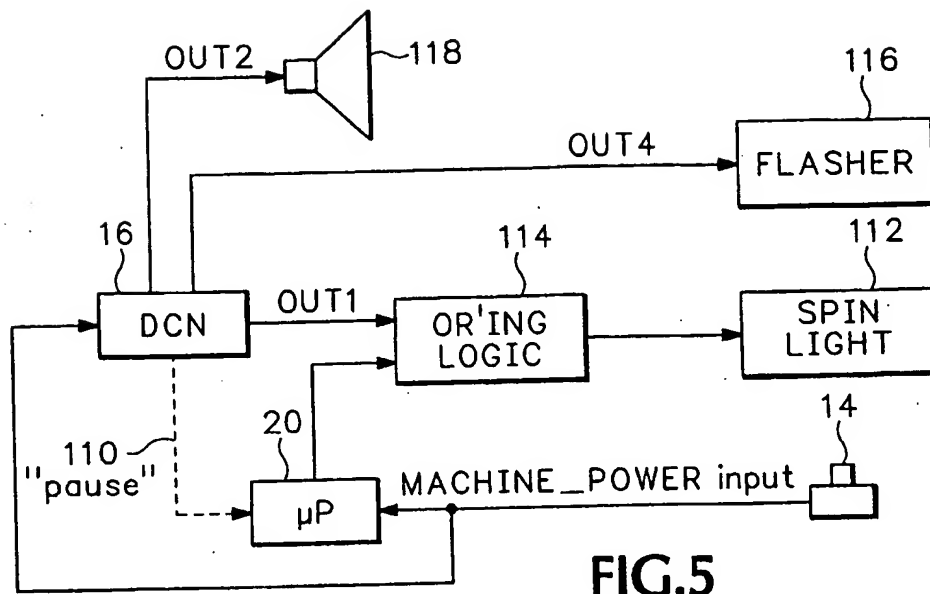


FIG.6

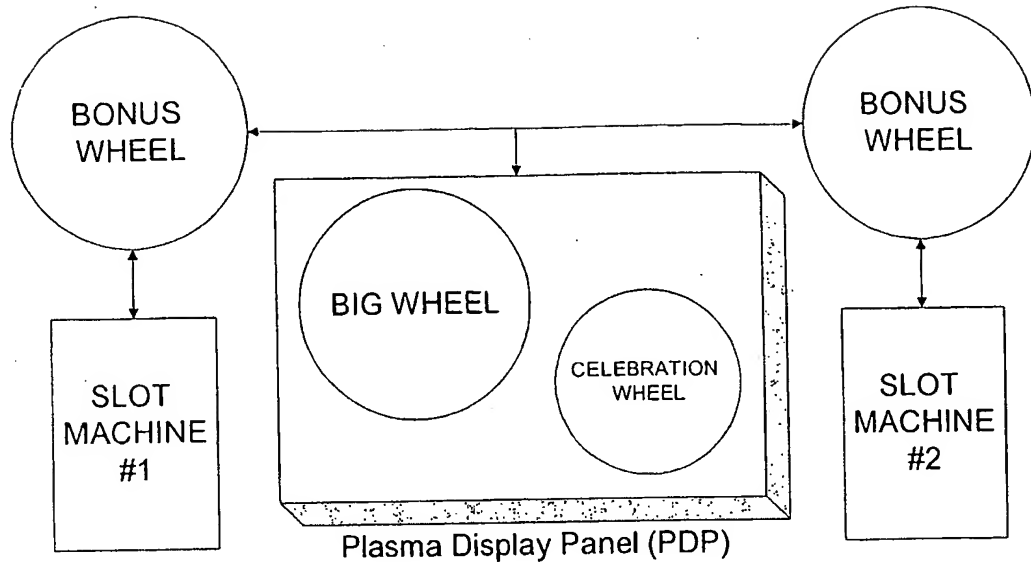


FIG. 7

